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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,333

08/31/2006

Steven Porter Hotelling

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EXAMINER

CHAPMAN JR, JOHN E

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,333	<b>Applicant(s)</b> HOTELLING ET AL.	
	<b>Examiner</b> John E. Chapman	<b>Art Unit</b> 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 4, 6, 14, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Folkmer et al. (6,561,029).

Folkmer discloses a vibratory rotational rate sensor comprising a pair of vibratory masses (506, 514) symmetrical with respect to a vibration axis (x), a driver (510) for inducing periodic motion in the vibratory masses along the axis (X), a first sense circuit (552) for sensing motion in one direction (Y) orthogonal to the vibratory axis, and a second sense circuit (516) for sensing motion in another direction (Z) orthogonal to the vibratory axis.

Regarding claims 6 and 19, the two sense axes are orthogonal to each other.

3. Claims 1, 2, 6, 14, 15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Peters (4,512,192) in view of Merhav (4,590,801).

Peters discloses a vibratory rotational rate sensor comprising a pair of vibratory masses (10, 12), a driver (28) for inducing periodic motion in the vibratory masses along a common axis (X), a first sense circuit (12) for sensing motion in one direction (Y) orthogonal to the vibratory axis, and a second sense circuit (10) for sensing motion in another direction (Z) orthogonal to the vibratory axis. While Peters describes pick-off coil (32) as a drive coil (col. 3, lines 50-51), Peters refers to Merhav (Ser. No. 357,715 and Ser. No. 528,776) for a description of this general arrangement for vibrating the pair of accelerometers (col. 3, lines 39-41). As evidenced by

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Merhav (a continuation of Ser. No. 528,776), only one coil is used for driving the pair of vibratory masses, the other being used only for sensing motion. See Figs. 8 and 9 of Merhav. Consequently, Peters anticipated a driver (28), coupled to only one vibratory mass (10) for inducing periodic motion in the pair of masses.

4. Claims 3, 7, 12, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters in view of Merhav, as described to claim 1 above.

Regarding claims 3 and 16, Peters discloses electromagnetic elements (28, 32) for driving the vibratory masses. The only difference between the claimed invention and the prior art consists in providing electromagnetic elements for sensing the acceleration of the vibratory elements. Electromagnetic accelerometers are well known in the art, and merely to use an electromagnetic accelerometer for the accelerometer (10, 12) of Peters would have been obvious to one of ordinary skill in the art for the purpose of measuring Coriolis force.

Regarding claims 7 and 20, the only difference between the claimed invention and the prior art consists in sensing motion of the vibratory masses (10, 12) along the vibratory axis and using the sensed motion to drive the vibratory masses, i.e., in providing a closed loop feedback control for the vibratory masses, which feature is well known in the art.

Regarding claim 12, the tuning fork (20) vibrates at resonance (column 3, lines 64-67). It is well known in the art and would have been obvious to provide the accelerometers (10, 12) with the same resonant frequency as the natural frequency of the tuning fork (20) in order to magnify the sense mode motion.

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5. Claims 8-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters in view of Merhav as applied to claim 1 above, and further in view of Lutz (5,604,312).

Regarding claims 8 and 19, Peters discloses a planar restoring element (20) comprising a resilient first member 20a coupled to one mass (12) and a resilient second member (20b) coupled to the other mass (10). The only difference between the claimed invention and the prior art consist in providing a plurality of members (20a, 20b) coupled to the masses. Lutz discloses a vibratory rotational rate sensor comprising a planar restoring element having resilient members (13) connected to each of the masses (1). Merely to provide a plurality of members (20a, 20b) for the purpose of supporting the masses (10, 12) would have been obvious for the purpose of improved stability of the vibrating masses.

Regarding claim 11, Lutz provides resilient mounting members (14) for the restoring element (13) in order to assist antiphase oscillation.

Regarding claim 13, the planar restoring element (13) of Lutz is radially 3-fold symmetric, namely, radially symmetric about the X, Y and Z axes.

6. Claims 5 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Folkmer et al. or Peters in view of Merhav as applied to claim 1 above, and further in view of Varnham et al. (5,226,321).

Regarding claims 5 and 18, the only difference between the claimed invention and the prior art consists in intermittently driving and sensing motion of a vibratory mass. Varnham et al. teaches driving in bursts and monitoring in the periods between drive bursts in order to avoid crosstalk problems between primary axes excitation and secondary axes detection. It would have

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been obvious to one of ordinary skill in the art to intermittently drive and sense motion of the vibratory mass of either Folkmer or Peters in order to avoid crosstalk problems between primary axes excitation and secondary axes detection.

7. Applicant's arguments filed July 21, 2008 have been fully considered but they are not persuasive. Applicant argues that Peters discloses two drive coils (28, 32) and does not show the driver coupled to only one of the vibratory masses for inducing periodic motion in the pair of vibratory masses along the axis. However, such argument overlooks the description of element 32 as a pick-off coil (col. 3, line 48) and the reference to Merhav for a description of the general arrangement for vibrating the pair of accelerometers. Note also Folkmer et al. in this regard.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John E. Chapman whose telephone number is (571) 272-2191. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John E Chapman/  
Primary Examiner  
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